

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Tatsushi Ako, et al. Art Unit: 1796  
Serial No: 10/576,199 Examiner: Frances Tischler  
Filed: April 17, 2006  
For: RECLAIMED RESIN COMPOSITION PRODUCED FROM  
PULVERIZED WASTE PLASTIC MATERIAL CONTAINING  
SOLID FOREIGN MATERIALS

Hon. Commissioner of Patents and Trademarks  
Washington, D.C. 20231

DECLARATION PURSUANT TO RULE 132

I, Tatsushi Ako, one of the above-named applicants, declare and state that:

1. I am familiar with the prosecution history of the subject application.

2. I have studied and understood the contents of the cited Casey (US H1120).

3. I now submit comparative experimental data which were obtained in experimental runs performed under my supervision. The experimental runs were carried out in the same manner as described in Examples 1 to 3 set forth in the specification, except that a pulverized waster material having a slightly different nature is used and that a filler (titanium dioxide, calcium carbonate or carbon black) is used in an amount of 5 wt.%.

4. Details of the experimental runs and data are given below.

(1) Waste plastic material to be reclaimed

Disused polypropylene household products were washed and pulverized to give a pulverized waste resin material having a size of 5 to 16 mm. The pulverized waste resin material was a mixture of colorless, white, and cream-color particles. The pulverized waste resin material was dry-blended in a blender, and kneaded under melting in a dual worm extruder under the conditions of a barrel temperature of 220°C and a processing rate of 60 kg/hr., to give pellets of the waste resin material. The pellets comprised crystalline polypropylene and approx. 10 wt.% of ethylene-propylene rubber.

The pellets contained approx. 0.05 wt.% of solid foreign materials.

## (2) Filler

I noted that the cited Casey indicates calcium carbonate, talc, carbon black, and pigments as examples of the employable fillers (col. 5, lines 8-10) and a range of 5 to 15 wt.% for the amount of the fillers (col. 5, lines 62-64).

In consideration of the above-mentioned description of the cited Casey, comparative experimental runs were carried out under the following conditions:

Filler: calcium carbonate, titanium dioxide, or carbon black in an amount of 5 wt.%

It should be noted that talc is natural origin, and various kind of talcs having different physical characteristics were available, while calcium carbonate, titanium dioxide and carbon black of synthetic origin were easily available.

It should be further noted that addition of an increased amount of calcium carbonate gives little influence to lightness and transmittance of the molded sheet, addition of an increased amount of titanium dioxide exceedingly increases lightness and exceedingly decreases transmittance, and addition of an increased amount of carbon black exceedingly decreases lightness and transmittance of the molded sheet.

(3) Production of reclaimed resin composition

The pulverized waste resin material, a filler, a lubricant, and an oxidation inhibitor were blended in a blender under a dry condition, and kneaded under melting in a dual worm kneader under the conditions of a barrel temperature of 220°C and a processing rate of 60 kg/hr., to obtain pellets of a reclaimed resin composition. The procedure was carried out without a screen.

(4) Production of Specimen A and B

The pellets of the reclaimed resin composition were processed to prepare a specimen A and a specimen B. The lightness and appearance of the specimen A were determined and observed. Further, the light transmittance of the specimen B was determined.

(5) Results of determinations and observations on specimen

Control Composition (containing no fillers)

	weight parts
pulverized waste plastic material	100
calcium stearate (lubricant)	0.1
Irgafos 168 (oxidation inhibitor)	0.05

Lightness: 83.92, Transmittance (%): 86.64

Lightness x transmittance = 7271

Hue: cream

Appearance: solid foreign materials were clearly noticed in the molded sheet

(I) Comparative Composition I:

	weight parts
pulverized waste plastic material	100
calcium carbonate	5
calcium stearate (lubricant)	0.1
Irgafos 168 (oxidation inhibitor)	0.05

Lightness: 81.92, Transmittance (%): 83.54

Lightness x transmittance = 6844

Hue: cream

Appearance: solid foreign materials were clearly  
noticed in the molded sheet

(II) Comparative Composition II:

	weight parts
pulverized waste plastic material	100
titanium dioxide	5
calcium stearate (lubricant)	0.1
Irgafos 168 (oxidation inhibitor)	0.05

Lightness: 93.50, Transmittance (%): 44.33

Lightness x transmittance = 4145

Hue: white

Appearance: some solid foreign materials were  
noticed in the molded sheet

(III) Comparative Composition II:

	weight parts
pulverized waste plastic material	100
carbon black	5
calcium stearate (lubricant)	0.1
Irgafos 168 (oxidation inhibitor)	0.05

Lightness: 22.79, Transmittance (%): 0

Lightness x transmittance = 0

Hue: black

Appearance: The molded sheet is fully black  
permitting no light transmission

5. Conclusion

If a representative filler such as a white pigment (e.g., calcium carbonate or titanium dioxide) or carbon black is added not in combination with other pigments under such conditions that the resin composition produced from pulverized

waste plastic material cannot give a molded sheet having a lightness, a transmittance, and a value obtained by the lightness multiplied by the transmittance (namely, lightness x transmittance ) in the claimed specific ranges when a reclaimed resin composition is produced, the reclaimed resin composition cannot be favorably employed for manufacturing various molded products having good appearance.

6. The above-mentioned declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that any willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.



Tatsushi AKO

March 30, 2009